

GREENKLEEN®-60 PLUS



Product Data

6/14: 5519

Description: Dense, Low Cement Refractory Castable Containing Andalusite

- Features:
- Outstanding abrasion resistance.
 - Excellent thermal shock resistance.
 - High resistance to penetration and corrosion by molten aluminum.
- Uses:
- Aluminum furnaces included: Hearths, Ramps, Sidewalls, Troughs, Ladles, and Crucibles.
 - FCCU transfer lines.
 - Incinerator working linings and water quench regions.
 - Burner blocks.
 - Forge furnace pier blocks.
 - Cement grate clinker coolers.

Chemical Analysis: Approximate (Calcined Basis)

Silica (SiO ₂)	33.2%
Alumina (Al ₂ O ₃)	60.3%
Iron Oxide (Fe ₂ O ₃)	0.8%
Titania (TiO ₂)	1.3%
Lime (CaO)	3.9%
Magnesia (MgO)	0.2%
Alkalies (Na ₂ O+K ₂ O)	0.3%

Physical Data (Typical)

Vibration Cast

Maximum Service Temperature	
Aluminum Contact	2200°F (1204°C)
All Other Applications	3000°F (1649°C)
Material Required	157 lb/ft ³ (2.52 g/cm ³)
Bulk Density	lb/ft ³ (g/cm ³)
After 230°F (110°C)	161 (2.58)
After 1500°F (816°C)	157 (2.52)
Modulus of Rupture	lb/in. ² (MPa)
After 230°F (110°C)	1,900 (13.1)
After 1500°F (816°C)	2,100 (14.5)
Hot Modulus of Rupture	lb/in. ² (MPa)
At 1500°F (816°C)	3,500 (24.1)
Cold Crushing Strength	lb/in. ² (MPa)
After 230°F (110°C)	12,000 (82.8)
After 1500°F (816°C)	9,000 (62.1)
Permanent Linear Change	
After 1500°F (815°C)	-0.2%
After 2500°F (1371°C)	+0.7%
Abrasion Loss	
After 1500°F (816°C)	6.0 cc

Note: The test data shown are based on average results on production samples and are subject to normal variation on individual tests. The test data cannot be taken as minimum or maximum values for specification purposes. ASTM test procedures used when applicable.

Product Data

Mixing and Using Instructions (Water calculated at 8.337 lb/gallon)	55 lb bag	1000 lb bag	1500 lb bag
Water Required—Vibration Casting (Weight 5.6%)			
Pounds	3.1	56.0	84.0
Gallons	0.4	6.7	10.1
Liters	1.4	25.4	38.1

For detailed mixing and using instructions, contact your HWI representative or visit www.thinkHWI.com.

Heatup/Dryout Schedule

See HWI Dryout Schedule 2—PLUS Rated Castables and Gunning Castables.

Installation Guidelines

See HWI Installation Guidelines LCC-1AL—Low Cement Castables Standard.

If castable material is installed without a permeable and unobstructed path to allow water removal from the lining through the cold face during dry out then weep holes and wicking can be used. **For installation in aluminum furnace hearths and/or ramps refer to HWI Installation**

Guidelines LCC-1AL – Low Cement Castables-Standard Aluminum.

Shelf Life (Under Proper Storage Conditions)	180 days
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